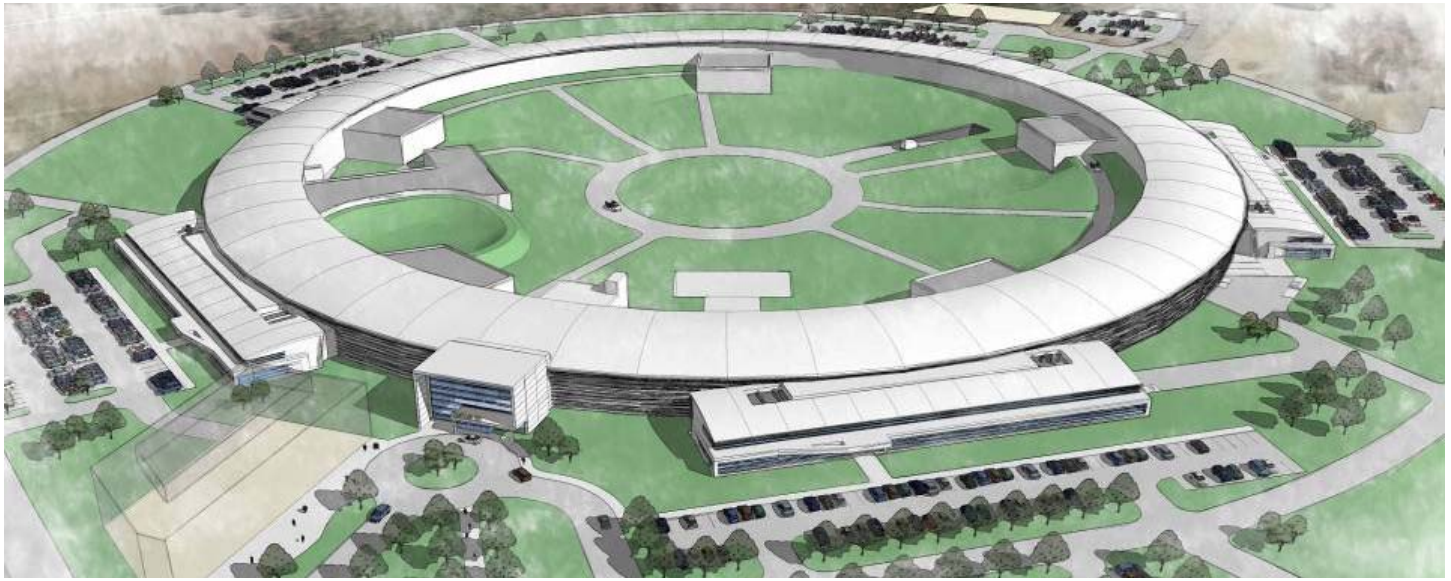
R+D Summary



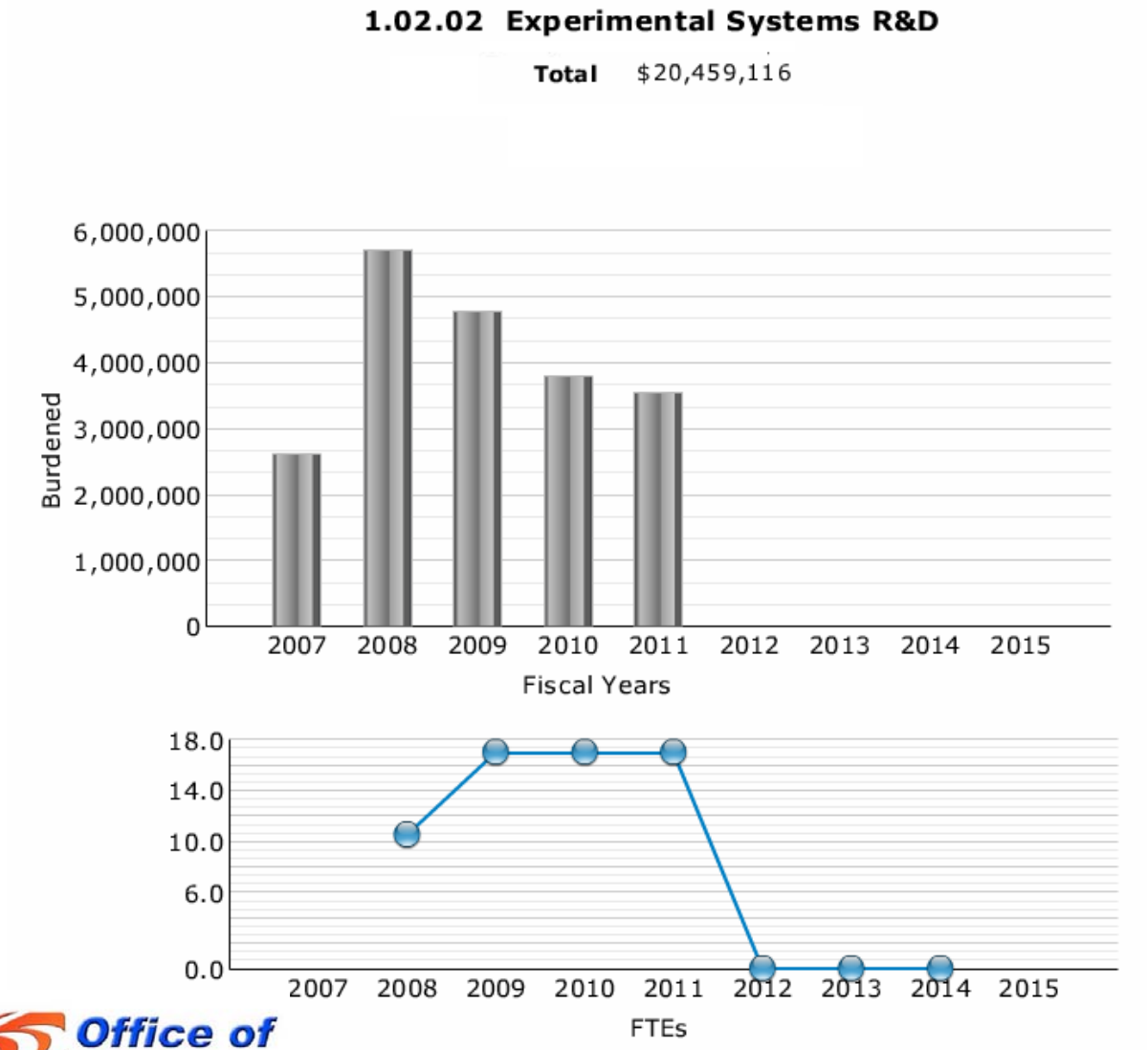
J. Hill, Division Director
EFAC October 5th , 2007

XFD R+D Plan

There are several key goals for the R+D program:

- 1nm spatial resolution
  - Optics and positioning
- 0.1 meV energy resolution
- Beam position and intensity monitors for stability
- High-heat load optics

Current Cost and FTE Profile



In FY12 R+D staff transition to early operations funds and/or beamline construction funds

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Size of Programs (FY08 - FY11)

- 0.1 meV (~ $5 M)

  Scientist
  2 x Assist. Scientist
  0.5 Designer
  Crystal Fab technician

- 1nm (~ $6.6 M)

MLL:	Kinoforms:
Scientist	Scientist
Deposition scientist	Assist. Sci
Theorist	Theory postdoc
Technician	
0.5 designer	

Size of Programs (FY08 - FY11)

- Nanopositioning (~$2.3 M)
  - Scientist
  - Post-doc
  - 0.5 Designer
- XBPM and I0 Monitor (~$0.7 M)
  - 1 postdoc
- Thermal Modeling (~ $1.4 M)
  - Scientist
  - Postdoc
  - 0.5 engineer

R+D Lab space needs

Nano-positioning Lab: Space needed for testing of engineering concepts. Vibrationally quiet, may need small thermal enclosures. No special utility requirements.

Optics Metrology Lab: Space needed for next generation LTP and ancillary equipment. Will need large thermally isolated space, with controlled air-flow. No special utility requirements.

MBE/Depositioning Lab: Space needed for multilayer deposition effort. Large MBE system, UHV chambers. Associated characterization hardware e.g. STM. Utility requirements still to be determined.

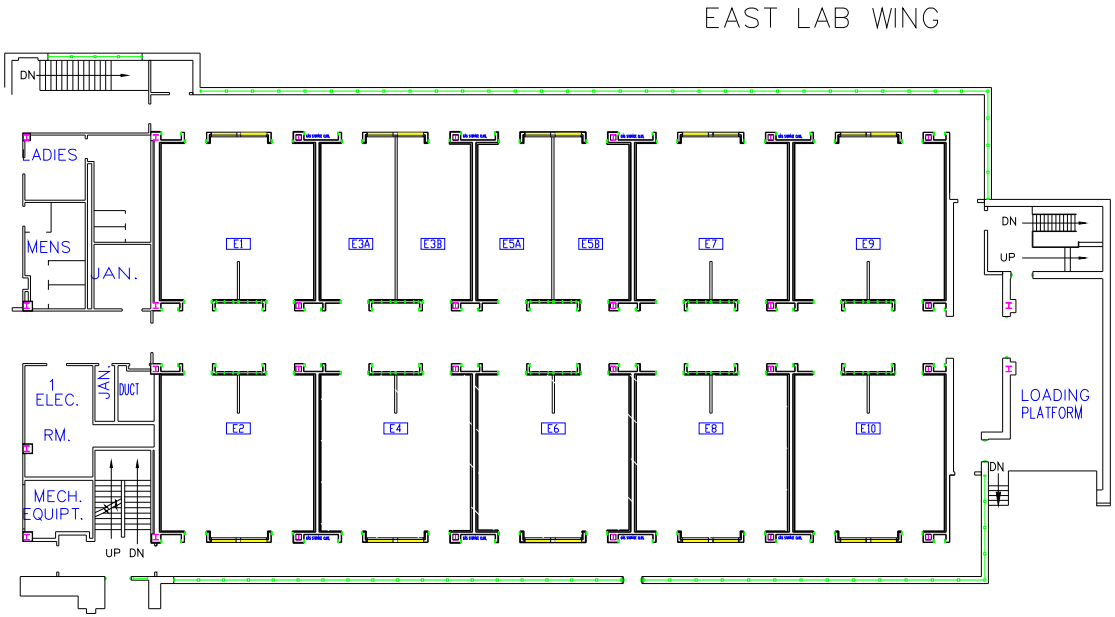
1nm R+D Lab space needs (cont.)

X-ray reflectivity Lab: To include rotating anode or tube source for Laue work and simple reflectivity measurements. May have more significant power requirements.

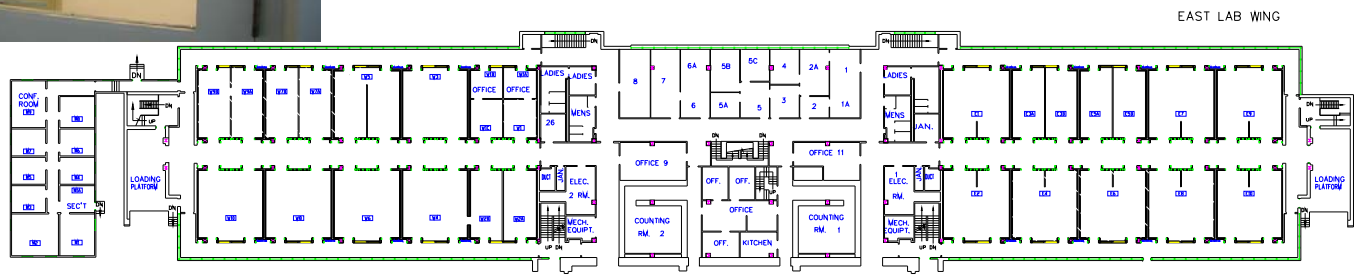
Wet Lab: For etching work (both kinoforms and 0.1 meV). Will require fume hood.

Crystal Fabrication lab: To include crystal orientation, cutting, grinding, polishing apparatus.

Building 703



Preparations underway



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R+D Summary

- Focused R+D program planned. Under R+D budget until FY12, then efforts expected to transition to early operations and/or beamline construction budgets.
- Efforts underway in 1 nm and 0.1 meV. Hiring needs to be aggressively pursued in both areas.
- Lab space needs identified, preparations underway, expected completion early 08